RAPOPORT, S.Ya.; ZUBKOVA, S.R.; SMIRNOVA, N.V.; NESMEYANOV, A.N., akademik, glavnyy red.; TOPCHIYEV, A.V., akademik, zam.glavnogo red.; ISAKOVA, O.V., otv.red.; LIKHTENSHTEYN, Ye.S., otv.red.; SHUMKOV, V.I., otv.red.; NIKITINA, O.G., red.izd-va; SUSHKOVA, L.A., tekhn.red.

Lina Solomonovna Shtern. Vstup.stat'ia S.IA.Rapoport i S.R.Zubkovoi. Bibliografiia sost. N.V.Smirnovoi. Moskva, 1960. 88 p. (Materialy k biobibliografii uchenykh SSSR. Ser.biologicheskikh nauk. Fiziologiia, no.8) (MIRA 14:3)

1. Akademiya nauk SSSR.
(SHTERN, LINA SOLOMONOVNA, 1878-) (BIBLIOGRAPHY--PHYSIOLOGY)

RAPOPORT, S.Ya.; GASANOVA, S.M.

Mechanism of early radiation injuries of the bone marrow.
Biofizika 5 no. 4:454-460 '60. (MIRA 13:12)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(MARROW) (X RAYS--PHYSIOLOGICAL EFFECT)

RAPOPORT, S.Ya., doktor meditsinskikh nauk; ROSIN, Ya.A., doktor meditsinskikh nauk

Histohematic barriers and their study. Vest.AN SSSR 30 no.9: 118-120 S '60. (MIRA 13:8)
(BODY FIELDS)

SHTEIN, L.S., akad., otv.red.; RAPOPORT, S.Ya., doktor med.nauk, red.; ROSIN, Ya.A., doktor med.nauk, zam. otv. red.; UTEVSKAYA, L.B., kand. biol.nauk, red.; TRINCHER, K.S., red. izd-va; VOLKOVA, V.V., tekhn.red.

[Histohematic barriers; transactions of the conference] Gisto-gematicheskie bar'ery; trudy soveshchaniia. Moskva, Izd-vo Akad.nauk SSSR, 1961. 406 p. (MIRA 14:12)

1. Konferentsiya po voprosam neposredstvennogo vozdeystviya na nervnyye tsentry. 3d, Moscow, 1960. 2. Laboratoriya fiziologii pri Institute biologicheskoy fiziki AN SSSR (for Utevskaya).
(CAPILLARIES—PERMEABILITY)

SHTERN, L.S., akademik, otv. red.; RAPOPORT, S.Ya., doktor med. nauk, red.; ROSIN, Ya.A., doktor med. nauk, prof., red.; TRINCHER, K.S., red. izd-va; POLENOVA, T.P., tekhn. red.

[Histohematic barriers and ionizing radiation] Gisto-gematicheskie bar'ery i ioniziruiushchaia radiatsiia; sbornik rabot laboratorii fiziologii. Moskva, Izd-vo Akad. nauk SSSR, 1963. 215 p. (MIRA 16:5)

1. Akademiya nauk SSSR. Institut biologicheskoy fiziki.
(Radiation—Physiological effect)
(Histology) (Hematology)

ACCESSION NR: AT3011774 S/2949/63/000/000/0017/0040

AUTHOR: Shtern, L. S.; Gromakovskaya, M. N.; Rapoport, S. Ya.

TITLE: Neurohumoral mechanisms of radiation damage in histohematic barrier permeability

SOURCE: Gisto-gematicheskiye bar'yery* i ioniziruyushchaya radiatsiya. Sbornik rabot laboratorii fiziologii. Moscow, AN SSSR, 1963, 17-40

TOPIC TAGS: histohematic barrier permeability, ionizing radiation, isotope method, phosphorus 32 distribution, iodine 131 distribution, histamine level, sertonine level, neuroreflexive mechanism, humoral mechanism, neurotropic substance, novocaine, atropine, morphine

ABSTRACT: Permeability changes in histohematic barriers after irradiation were studied in white rats by the isotope method. Animals X-irradiated with 800 r doses (31.4 r/min) were injected with radioactive phosphorus (P 32) or iodine (I-131). Tissue radioactivity of the animals killed at different periods was determined by an AS-2 aluminum counter for phosphorus and by an end

Card 1/3

ACCESSION NR: AT3011774

counter for iodine. The role of neuroreflexive mechanisms was studied by screening various parts of the body during irradiation and by investigating the effects of novocaine, atropine, and morphine. Free histamine and free sertonine levels in the organism were also studied to determine the role of humoral mechanisms in early radiation damage of histohematic barriers. Both radioactive phosphorus and iodine indicate that histohematic barrier permeability changes are a part of early radiation damage. The various neurotropic substances (novocaine, atropine, and morphine) administered before or after radiation remove or considerably reduce permeability changes. Screening parts of the body when applying local anaesthesia to the abdominal region also sharply reduces histohematic barrier permeability changes. Apparently these changes are neuroreflexive in nature and are related to changes in afferent nerve [illegible]ilsation from the abdominal organs. Histohematic barrier permeability changes in early radiation damage can be averted by changing the free histamine level with antihistamines and by changing the sertonine level with reserpine. Neurohumoral factors are important in determining histohematic barrier permeability levels under normal physiological conditions and in determining permeability changes in early

Card 2/3

ACCESSION NR: AT3011774

radiation damage. Orig. art. has: 15 tables.

ASSOCIATION: Laboratoriya fiziologii. Moscow. AN SSSR.
(Physiology Laboratory, AN SSSR)

SUBMITTED: 00 DATE ACQ: 07Oct63 ENCL: 00

SUB CODE: AM NO REF SOV: 041 OTHER: 053

Card 3/3

ACCESSION NR: AT3011785 S/2949/63/000/000/0186/0197

AUTHOR: Rapoport, S. Ya.; Zubova, S. R.

TITLE: Role of serotonin in permeability change of the hematoencephalitic barrier in ionizing radiation

SOURCE: Gisto-gematicheskiye bar'yery* i ioniziruyushchaya radiatsiya. Sbornik rabot laboratorii fiziologii. Moscow, AN SSSR, 1963, 186-197

TOPIC TAGS: serotonin, hematoencephalitic barrier permeability, X-irradiation, brain tissue, free serotonin, bound serotonin, reserpine administration, Vane's serotonin content method

ABSTRACT: In the first of two experimental series rats were X-irradiated with a single dose 1,000 r (RUP-1 unit, focal length 40 cm, 53 r/min) to determine the serotonin content of brain tissue and its effect on hematoencephalitic barrier permeability. In the second series serotonin content in the brain was reduced by reserpine injection and its effect on hematoencephalitic barrier permeability was studied under normal and radiation conditions.

Card 1/3

ACCESSION NR: AT3011785

Reserpine was injected in single doses (2-4 mg/kg) 6-8 hrs or 19-22 hrs before irradiation or as a daily dose for 4 days before irradiation. Radiation dose was a single 800-1,000 r dose and irradiating conditions were the same as in the first series. After the rats were decapitated at different periods serotonin content was determined in acetone extracts of brain tissue according to Vane's method (1957). Results show that on the first day after irradiation serotonin level of the brain tissue increases and coincides with a period of higher hematoencephalitic barrier permeability. After 24 hrs in most cases the serotonin level of the brain tissue decreases and hemoencephalitic barrier permeability decreases, and further serotonin level decreases are accompanied by further hematoencephalitic barrier decreases. The second series of experiments was carried out to determine whether there is a cause and effect relation between total serotonin level and hematoencephalitic barrier permeability. It was found that hematoencephalitic barrier permeability increases and serotonin level decreases after a single reserpine injection. With ionizing radiation after a single reserpine injection, hematoencephalitic barrier permeability does not increase but the serotonin level increases. It is known from the literature that serotonin in the

Card 2/3

ACCESSION NR: AT3011785

tissues is found in a bound state and is not subject to the action of its decomposing enzyme, monoaminooxydase. Radiation reduces total serotonin level in the brain by freeing bound serotonin. The free serotonin in turn affects the central nervous system and hematoencephalitic barrier permeability. Results of these studies are difficult to interpret because there is no existing method for identifying free serotonin and bound serotonin. With total serotonin levels the same, it is possible to have different levels of free pharmacologically active serotonin and different effects on hematoencephalitic barrier permeability. Orig. art. has: 6 figures, 5 tables.

ASSOCIATION: Laboratoriya fiziologii. Moscow. AN SSSR (Physiology Laboratory. AN SSSR)

SUBMITTED: 00 DATE ACQ: 07Oct63 ENCL: 00

SUB CODE: AM NO REF SOV: 007 OTHER: 014

Card 3/3

ACCESSION NR: AP4034549 S/0020/64/155/005/1198/1200

AUTHOR: Rapoport, S. Ya.; Krichevskaya, Ye. I.; Zubkova, S. R.

TITLE: Interaction of biogenic amines in the mechanism by which histamine protects against the effect of ionizing radiation

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1198-1200

TOPIC TAGS: catecholamine, serotonin, histamine, radiation protection, sympathetic nervous system

ABSTRACT: The interaction of biogenic amines in the mechanism by which histamine protects against the effect of ionizing radiation is discussed, as well as the assumption that this protection is accomplished through the liberation of certain amines in the tissues. The present work aimed at elucidating the role of catecholamine and serotonin in the above mechanism by conducting 3 series of experiments on white rats: a—functional exclusion of the sympathetic nervous system by ergo-

Card 1/3

ACCESSION NR: AP4034549

tamine, b — depletion of catecholamine and serotonin stores by prior reserpine administration, c — introduction of the serotonin antagonist, lysergic acid diethylamide. Experimental conditions are described (600 r irradiation, amounts, manner, and route of drug administration). The histamine (35—50 mg per rat) was administered 5 minutes before irradiation. Results are tabulated and show that histamine alone protected 34.8% of the animals. This effect was reduced upon prior blocking of the sympathetic nervous system and upon catecholamine and serotonin depletion. The important role of catecholamine in histamine protection was clearly seen in tests excluding the sympathetic nervous system (reduction of survival rate by 20% only). Introduction of the serotonin antagonist did not affect the protective histamine effect; thus, serotonin may be assumed not to play a significant role in this effect. These findings were confirmed in tests to determine catecholamine content in the adrenals, and serotonin in the upper intestinal tract and brain after histamine introduction. Five minutes after histamine administration the catecholamine in the adrenals was considerably reduced, while no change was detected in serotonin content. Orig. art. has: 3 tables.

Card 2/3

ACCESSION NR: AP4034549

ASSOCIATION: Institut biologicheskoy fiziki Akademii nauk SSSR (Institute of Biophysics, Academy of Sciences SSSR)

SUBMITTED: 03Jul63 ATD PRESS: 3060 ENCL: 00

SUB CODE: LS, OC NO REF SOV: 001 OTHER: 007

Card 3/3

ACC NR: AT6028378 (N) SOURCE CODE: UR/0000/65/000/000/0124/0141

AUTHOR: Vartanov, S. P.; Gagel'gants, A. A.; Krolenko, I. I.; Levchenko, V. A. Malovitskiy, Ya. P.; Milashin, A. P.; Rapoport, S. Ya.; Fedynskiy, V. V.; Shapirovskiy, N. I.; Shekinskiy, E. M.

ORG: none

TITLE: Geological results of marine geophysical exploration in the USSR

SOURCE: International Geological Congress. 22d, New Delhi, 1964. Geologicheskiye rezul'taty prikladnoy geofiziki (Geological results of applied geophysics); doklady sovetskikh geologov, problema 2. Moscow, Izd-vo Nedra, 1965, 124-141

TOPIC TAGS: geophysic expedition, earth structure, seismic prospecting, ocean floor topography, tectonics

ABSTRACT: Marine geophysical exploration have been conducted in the Soviet Union for the purpose of investigating the crustal structure, and regional geological investigations have been made in offshore areas which are potential oil- and gas-bearing structures. The seismic method is the most effective and most often used for offshore investigations. Also successful are gravimetric, magnetic, and electric prospecting methods. The technique of offshore seismic shooting has been greatly improved, making it possible to operate from a moving ship. The geophysical investigations conducted on the Caspian Sea made it possible to distinguish the areas of

Card 1/3

ACC NR: AT6028378

the Pre-Cambrian Epihercynian platform and the Alpine geosyncline. Investigations have been made of the regional structure of the south Caspian depression, oil-bearing regions of its folded margins, and gentle structures of the internal depression. The area of the Epihercynian platform has been found to contain Kara-Bugaz and middle Caspian arches and offshore continuation of the South Mangishlack depression as well as folded zones. The continuations of the South Mangishlack and Karpinsky ridge, the north Caspian zone of marginal uplifts of the Pre-Cambrian platform and the offshore continuation of the Pre-Caspian depression have been thoroughly investigated. A number of structures in the southern part of the Caspian Sea have been prepared for deep drilling. At the Sea of Azov a step-like submergence of the southern slope of the Pre-Cambrian platform has been established, and the Azov rampart, which connects the Epihercynian folded structures of the Northern Caucasus and Crimean steppe has been located. Offshore continuations of the Kerch-Taman dislocations have been studied. At the Black Sea geophysicists have studied the hidden Cretaceous folding and deep-seated faults at the offshore continuation of the Kolkhida depression, submergence of the northwestern Caucasus, buried highs south of the Crimea and the jointing between the Crimean and Dobrudga dislocations. Also the structure of the crust and the structure of the sedimentary strata in the deep-sea areas have been studied. Seismic surveys have been conducted to study the geology of the Paleozoic deposits and the surface of the basement in the eastern Baltic Sea. It has been established that the thickness of the sediments within the offshore continuation of the Polish-Lithuanian synecline does not exceed 3 km. Interesting results have been obtained from geophysical investigations conducted at

Card 2/3

ACC NR: AT6028378

the Kara Sea near the mouths of the Ob and Yenisey Rivers. The regional structure of the Jamal-Nazim depression and the Taimir foredeep has been defined, major platform structures have been located in the Mesozic strata, and the Taimir has been followed further out into the sea. Deep-seated structure of the Earth's crust has been investigated in the transitional zone between the Asian continent and the Pacific Ocean, and also at the Okhotsk Sea and in the area of the Kamchatka-Kurile ridge. It has been found that the Sakhalin Tertiary folding area extends under the waters of the Okhotsk Sea. Marine geophysical exploration in the USSR will be expanded. Orig. art. has: 7 figures.

SUB CODE: 08/ SUBM DATE: 06Jan65/ ORIG REF: 048

Card 3/3

SHTERN, L.S., akademik, otv. red.; RAPOPORT, S.Ya., doktor med. nauk, red.; ROSIN, Ya.A., doktor med. nauk, prof., red.; LANDAU-TYLKINA, S.P., red.

[Problems of histohematic barriers; transactions] Problemy gisto-gematicheskikh bar'erov; trudy. Moskva, Nauka, 1965. 330 p. (MIRA 18:10)

1. Soveshchaniye po probleme gisto-gematicheskikh bar'yerov. 2d, 1963.

GOBERMAN, K.I.; PAPOPORT, S.Ya.; TUMIKYAN, G.G.

Tectonic pattern of the Lokbatan-More area based on seismic prospecting data. Azerb. neft. khoz. 42 no.1:6-8 Ja '63. (MIRA 16:10)

(Apsheron Peninsula--Submarine geology)

RAPOPORT, S.Ya.; SHAPIROVSKIY, N.I.; RUDAKOVSKIY, G.I., nauchnyy red.; BORUSHKO, T.I., red.izd-va; IVANOVA, A.G., tekhn. red.

[Present status of and prospects for the development of shore seismic prospecting for oil and gas] Sovremennoe sostoianie i perspektivy razvitiia seismicheskogo metoda poiskov neftianykh i gazovykh mestorozhdenii na more. Moskva, Gosgeoltekhizdat, 1962. 43 p. (MIRA 16:6)
(Seismic prospecting)

L 55008-65 EWT(1)/EWA(h) Peb GM UR/0169/65/000/005/D018/D018
ACCESSION NR: AR5014449 550.834.5

16
B

SOURCE: Ref. zh. Geofizika, Abs. 5D103

AUTHOR: Rapoport, S. Ya.; Shapirovskiy, N. I.

TITLE: Multiple reflected waves in marine[12] seismic[12] exploration

CITED SOURCE: Tr. Azerb. n.-i. in-t po dobyche nefti, vyp. 11, 1964, 27-44

TOPIC TAGS: seismology, seismic wave, water wave, seismic exploration, marine seismography

TRANSLATION: This paper gives a brief analysis of multiple reflections recorded during sea and laboratory observations. Certain methods for their identification and suppression are described. The sea observations were made in the western part of the central and southern sectors of the Caspian Sea. Single reflections were recorded for the most part in the regions adjacent to the Bakinskiy and Apsheronskiy archipelagos. Within these areas there are relatively small sectors with clearly expressed multiple water waves, probably associated with out-crops of bedrock on the sea floor. Closer to the central part of the Caspian Sea the num-

Card 1/3

L 55008-65
ACCESSION NR: AR5014449

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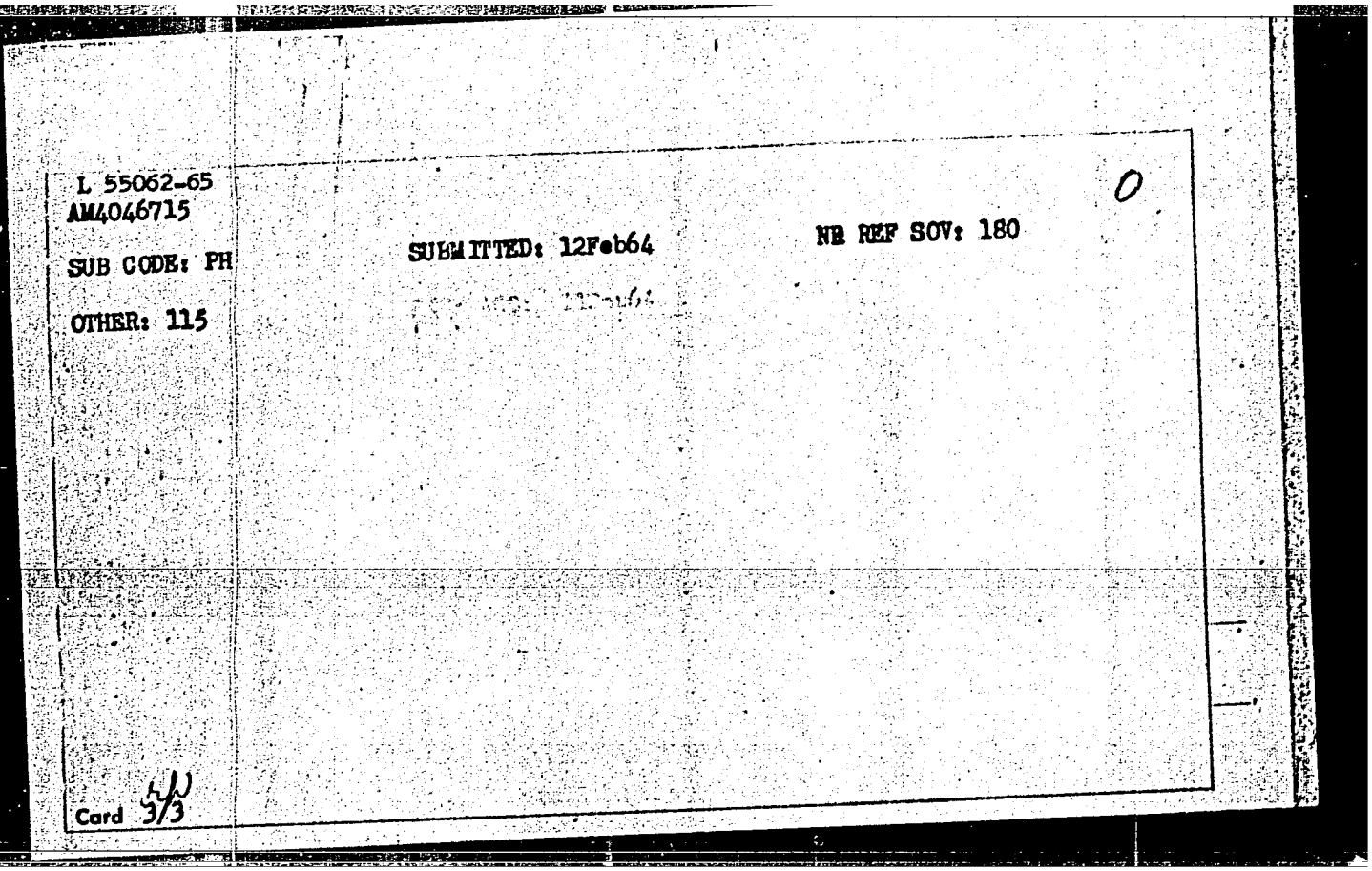
ber of multiple water reflections increases. Upon emergence into the platform region there is a dominance on the records of multiple and partially multiple water waves for times greater than 1-2,5 seconds; these create a complex interference pattern. It is noted that the formation of multiple reflections is not related to sea depth. The decisive factor is the presence of a high coefficient of reflection from the sea floor or the strata beneath the floor. The configuration of the bottom relief plays a definite role in this case. A horizontal floor creates the most favorable conditions for the appearance of multiple reflections. The source for formation of multiple reflections is not only that part of the energy of the shot held in the water layer, but also the energy returning to the water layer after reflection from the deeper layers. A relationship has been established between the frequency spectrum, duration of multiple reflections and sea depth (thickness of the water layer). In the case of small depths, multiple reflections have a high-frequency spectrum and in seismic exploration at sea are given the name reverberation interference. In the case of great depths they have a middle-frequency spectrum with frequencies of the same order of magnitude as deep oscillations. Analysis of effective velocities in

Card 2/3



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AM4046715

SUB CODE: PH

SUBMITTED: 12Feb64

NR REF SOV: 180

OTHER: 115

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Card 3/3

RAPOPORT, S. Ya.; SHAPIROVSKIY, N. I.; GANBAROV, Yu.G.

Offshore seismic prospecting in the Azerbaijan S. S. R. Trudy AzNII DN no.9:11-25 '60 (MIRA 14:5)
(Azerbaijan--Seismic prospecting)

RAPOPORT, T.B., kand.arkhit., dotsent

Characteristics of the design and planning of dwellings in the southern regions of the U.S.S.R. (including those for the needs in railroad transportation). Uch.zap. VZIIT no.13: 94-137 '64. (MIRA 19:1)

RAPOPORT, T.B.; GINZBURG, I.G.; KRASNIKOV, M.A.; KUROVA, A.V., red.

[Engineering and structural drawing; a manual for students in course II of "Building of Railroads", "Bridges and Tunnels", "Industrial and Civilian Construction", "Water Supply and Sewerage System", "Economics and Organization of Construction for Railroad Transportation"] Inzhenerno-stroitel'noe cherchenie; uchebnoe posobie dlia studentov II kursa spetsial'nostei: "Stroitel'stvo zheleznykh dorog"(S), "Mosty i tonneli" (MT), "Promyshlennoe i grazhdanskoe stroitel'stvo" (PGS), "Vodosnabzhenie i kanalizatsiia" (VK), "Ekonomika i organizatsiia stroitel'stva na zheleznodorozhnom transporte" (ES). Moskva, Vses. zaochnyi in-t inzhenerov zhel-dor. transp., 1963. 69 p. (MIRA 17:9)

RAPOPORT, T L.

29(0) PHASE I BOOK EXPLOITATION SOV/3184

Isakov, Petr Kuz'mich, Viktor Pavlovich Kaznevskiy, Valeriy Konstantinovich Lutskiy, and Tamara Lyudvigovna Rapoport

Iskusstvennyye sputniki zemli; 100 voprosov i otvetov (Artificial Earth Satellites; 100 Questions and Answers) Moscow, 1959. 95 p. 75,000 copies printed.

Sponsoring Agency: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR, and Vsesoyuznoye dobrovol'noye obshchestvo sodeystviya aviatsii i flotu. Sektsiya astronavtiki.

Ed. (Title page): V. P. Kaznevskiy; Ed. (Inside book): L. M. Gorodenskiy; Tech. Ed.: G. V. Furman.

PURPOSE: This booklet is intended for the general reader interested in space exploration and travel.

COVERAGE: This booklet on space vehicles and travel is set up in the form of questions and answers. Among the questions discussed are: the construction of satellites, fuels, rockets,

Card 1/11

orbital motion, satellite observation, man in space, astronavigation, etc. The authors thank Professor V. V. Dobronravov, Professor N. A. Fomin, I. A. Merkulov, Candidate of Technical Sciences S. M. Il'yashenko, N. A. Varvarov, V. G. Panteleyev, V. V. Glukhov, and N. V. Danilevskaya. No references are given.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

Card 11/11

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ISAKOV, Petr Kuz'mich; KAZNEVSKIY, Viktor Pavlovich; LUTSKIY, Valeriy Konstantinovich; RAPOPORT, Tamara Lyudvigovna; DOBRONRAVOV, V.V., prof., retsenzent; FOMIN, N.A., prof., retsenzent; MERKULOV, I.A., retsenzent; IL'YASHENKO, S.M., kand.tekhn. nauk, retsenzent; VARVAROV, N.A., retsenzent; PANTELEYEV, V.G., retsenzent; GLUKHOV, V.V., retsenzent; GORODENSKIY, L.M., red.; FURMAN, G.V., tekhred.

[Artificial earth satellites; 100 questions and answers] Iskusstvennye sputniki zemli; 100 voprosov i otvetov. Pod red. V.P.Kaznevskogo. Moskva, Obshchestvo po rasprostraneniiu polit. i nauchn.znanii, 1959. 95 p. (MIRA 12:6)
(Artificial satellites)

L 31160-65 EPF(c) EPF(n)-2/EWG(j)/EWA(h)/EWP(j)/EWT(m)/EWA(1) Pc-4/Pr-4/
Pu-4/Peb GO/RM

ACCESSION NR: AP5008234 S/0286/65/000/005/0129/0129

AUTHOR: Dogadkin, B. A.; Tutorskiy, I. A.; Markov, V. V.; Gol'danskiy, V. I.; Yegorov, Ye. V.; Rapoport, V. B.; Shumanov, L. A.

TITLE: A method for the preparation of radiation-resistant coatings. Class 39, No. 151801

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 5, 1965, 129

TOPIC TAGS: polymer coating, radiation damage, polymer solution, polyisoprene rubber

ABSTRACT: This Author Certificate describes the use of a 40% solution of cyclized polyisoprene rubber in xylene and white spirit for producing radiation-resistant coatings. [VS]

ASSOCIATION: none

SUBMITTED: 30Oct61 ENCL: 00 SUB CODE: MT, CH

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3212

Card 1/1

GOL'DANSKIY, V.I.; GUSAKOVSKAYA, I.G.; YEGOROV, Ye.V.; KORCIEV, G.V.; RAPOPORT, V.B.

Radiation polymerization of polyacrylates. Dokl. AN SSSR 160 no.3:646-649 Ja '65. (MIRA 18:3)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent AN SSSR (for Gol'danskiy).

L 53979-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(j)/T/EWA(h)/EWA(1) Pc-4/Pr-4/
Ps-4/Peb/P1-4/Pu-4 RPL WW/JW/GG/RM
ACCESSION NR: AP5012769 UR/0020/65/161/006/1368/1370

55
AUTHOR: Markalov, I. M.; Gol'danskiy, V. I. (Corresponding member AN SSSR); 52
Rapoport, V. B. 8

TITLE: Calorimetric analysis of the kinetics of radiation polymerization 7

SOURCE: AN SSSR. Doklady, v. 161, no. 6, 1965, 1368-1370

TOPIC TAGS: calorimetry, radiation polymerization, kinetics, polymerization, solid phase 19

ABSTRACT: A special heat-conducting calorimeter was built according to the principle of Calvier's microcalorimeter for making measurements directly in a radiation field. A diagram of the calorimeter is shown in fig. 1 of the Enclosure. Two identical vessels of pure copper with the test sample (1) and a calibrating device (2) are surrounded by casings (3 and 4) which are identical in their thermophysical properties and through which flows practically all the heat given off in the sample and calibrating device. The termal flows which pass between casings 3 and 4 create between their inner and outer surfaces temperature drops which are controlled by a battery of thermocouples (5 and 6) connected differentially to a galvanometer (7).

Card 1/3

L 53979-65
ACCESSION NR: AP5012769

3

The measuring vessels with their casings are placed in a massive copper block which provides an even temperature field around the batteries of thermocouples. The block (8) is placed in a thermostatic copper casing (9) in which the liquid of the thermostat circulates. Between the thermostatic casing (9) and the block (8) are 4 copper screens (10) each 0.2 mm thick. The radiation of the operating vessel of the calorimeter can be conducted both from the end of the calorimeter through channel (11) and also radially through the walls of the thermostatic chamber. A calorimeter of this design was used in working on the following three problems: (1) investigation of the kinetics of radiation polymerization of polyesteracrylates; (2) measurement of the heats of fusion and phase transitions in certain monomers; and (3) investigation of the kinetics of solid phase polymerization directly during radiation. Orig. art. has: 4 figures

ASSOCIATION: Institut khimicheskey fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 21Dec64 ENCL: 01 SUB CODE: TD, GC

NO REF SOV: 004 OTHER: 000

Card 2/3

L 53979-65
ACCESSION NR: AP5012769

ENCLOSURE: 01

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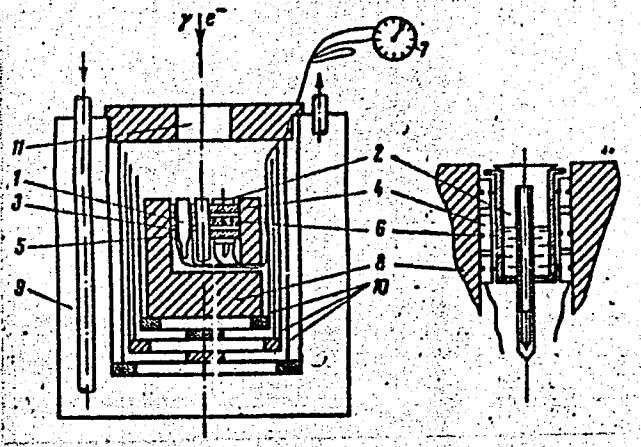


Fig. 1. Diagram of the calorimeter

Card 3/3

RAPOPORT, V.L.; SOLONITSYN, Yu.P.

Photosorption of hydrogen on titanium dioxide. Dokl. AN SSSR 143 no.5:1149-1151 Ap '62. (MIRA 15:4)

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova. Predstavleno akademikom A.N.Tereninym.
(Hydrogen) (Titanium oxide) (Sorption)

RAPOPORT, V.L.

Forms of oxygen adsorption on titanium dioxide and its photoactivation. Dokl. AN SSSR 153 no.4:871-874 D '63. (MIRA 17:1)

1. Fizicheskiy institut Leningradskogo universiteta im. A.A. Zhdanova. Predstavleno akademikom A.N. Tereninym.

3691?
S/020/62/143/005/016/018
B101/B110

5.4500

AUTHORS: Rapoport, V. L., and Solonitsyn, Yu. P.

TITLE: Photosorption of hydrogen on titanium dioxide

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 5, 1962, 1149-1151

TEXT: Photosorption of H_2 on TiO_2 was studied by means of an apparatus described earlier (ZhFKh, 32, 2142 (1958)), in which the Hg seal was replaced by a brass valve with fluoroplast packing. The pressure drop of H_2 which had been conducted into the vessel containing the sample (initial P_{H_2} about $6.4 \cdot 10^{-5}$ mm Hg) was measured. Powdered samples of TiO_2 were studied (a) untreated; (b) annealed at 350°C in 0.5 atm O_2; subsequently, O_2 was again removed by heating at 350-400°C in the vacuum; (c) only annealed in O_2. Only samples (c) showed photosorption

Card 1/4

Photosorption of hydrogen on ...

of H_2. The electric resistance prior to annealing in O_2 was $3 \cdot 10^5$ ohms, after annealing $4 \cdot 10^7$ ohms. No photoconductivity was observed. The resistance of the sample did not change when H_2 was introduced into the vessel. The p_{H_2} drops rapidly and irreversibly as soon as the sample is illuminated (Hg lamp or powerful monochromator) and gradually (after about 20 min) approaches a limiting value (about $3.2 \cdot 10^{-5}$ mm Hg). Evacuation at room temperature and introduction of another portion of H_2 did not lead to a regeneration of photosorption which, however, was brought about by a short heating of the sample to 400°C. In this connection no gases were released. The following possibilities are assumed: (1) the adsorbed H_2 migrates from the illuminated active centers to the non-illuminated ones; (2) H_2 diffuses into the TiO_2 lattice; (3) H_2 reacts with TiO_2 under formation of H_2O whose small amounts cannot be detected. The degree of saturation of the monolayer with H_2 was only 0.001-0.01 so that it was uncertain whether H_2 sorption

Photosorption of hydrogen on ...

took place on the TiO_2 surface or on defects. Maximum photosorption at the edge of the self-absorption band (about 400 mμ) was achieved by illumination with individual spectral lines in the range between 313 and 577 mμ. Sorption experiments at 0-200°C showed that the rate of photosorption decreases with increasing temperature. To change the carrier concentration in the surface layer of TiO_2 small amounts of O_2 were conducted into the vessel. The resistance then increased from $4 \cdot 10^7$ to $> 1 \cdot 10^{11}$ ohms without change in the H_2 photosorption effect. It is concluded that (A) photosorption is independent of the state of electrons on the TiO_2 surface; (B) photosorption is no photochemical reaction with adsorbed O_2. The mechanism of this effect is still unexplained. It probably differs from that observed by A. Luyckx, J. Bodart, C. Rens (J. Chem. Phys., 39, 139 (1942); J. Am. Chem. Soc., 64, 1731 (1942)) because (i) no Hg vapor was present in the authors' experiments, and (ii) photosorption occurred on illumination with

Card 3/4

Hg lamp as well as with incandescent lamp. There are 2 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

PRESENTED: November 16, 1961, by A. N. Terenin, Academician

SUBMITTED: October 20, 1961

Card 4/4

L 52319-65 EWT(l)/EWT(m)/EEC(t)/T Pz-6/Pi-4 IJP(c) RWH/AT

ACCESSION NR: AP5010723 UR/0181/65/007/004/1124/1131

AUTHOR: Rapoport, V. L.; Basov, L. L. 21

TITLE: On the nature of slow photoconductivity in zinc oxide

SOURCE: Fizika tverdogo tela, v. 7, no. 4, 1965, 1124-1131

TOPIC TAGS: zinc oxide, slow photoconductivity, surface state, photodesorption, activation energy

ABSTRACT: To reconcile the experimental data with the photodesorption model of slow conductivity, the authors measured the photoconductivity in powdered layers of zinc oxide and simultaneously monitored the pressure in the working volume with a sensitive Pirani manometer. The apparatus and technique were analogous to those described earlier (DAN SSSR v. 153, 871, 1963). The sample preparation and the auxiliary equipment are described briefly. The results show that under certain conditions the slow photoconductivity is due not to photodesorption of oxygen, and only to partial discharging of surface oxygen, thereby lowering the potential barriers between the grains and reducing the activation energy. The illumination-

Card 1/2

L 52519-65

ACCESSION NR: AP5010723

4

induced increase in photoconductivity can be returned to its previous level by heating in vacuum under conditions where there is no photodesorption of the oxygen. A qualitative model of slow photoconductivity is presented in terms of slow surface states. It is noted that the process of slow photoconductivity may be accompanied by surface photochemical reactions, and this leads to additional changes in the photoconductivity. A similar annealing of slow photoconductivity in vacuum is observed also for In_2O_3 and SnO_2. "The authors thank Academician A. N. Terenin for guidance and Yu. P. Solonitsyn for useful discussions." Orig. art. has: 3 figures and 3 formulas.

ASSOCIATION: Leningradskiy gosudarstvennyy universited (Leningrad State University)

SUBMITTED: 01Jun64 ENCL: 00 SUB CODE: EM, IC

NR REF SOV: 009 OTHER: 012

llc

Card 2/2

L 10462-67 EWT(d)/FSS-2/EEC(k)-2

ACC NR: AP6031042 SOURCE CODE: UR/0146/66/009/004/0073/0077

37

AUTHOR: Ivanov, O. A.; Rapoport, V. L.

ORG: none

TITLE: Investigation of a ball-supported gyroscope

SOURCE: IVUZ. Priborostroyeniye, v. 9, no. 4, 1966, 73-77

TOPIC TAGS: gyro, gyroscope

ABSTRACT: The method of successive approximations is used to determine the torques which a ball support imposes on a gyro (see figure); this design has been employed in precision vertical gyros. In the general case, when two error angles exist between the gyro axis and the true vertical Oj, these torques are applied to the gyroscope:

$$M_\xi = -\frac{PfR\sin 2\nu}{4}\beta - \frac{Pf^2R\cos^2\nu\sin\nu}{4}\alpha - \frac{PfR\operatorname{tg}\nu}{2\varphi}\dot{\alpha},$$

$$M_\nu = \frac{PfR\sin 2\nu}{4}\alpha - \frac{Pf^2R\cos^2\nu\sin\nu}{4}\beta - \frac{PfR\operatorname{tg}\nu}{2\varphi}\dot{\beta}.$$

where: P - gyro weight, f - sliding-friction coefficient, R - ball radius, α - angular velocity, φ - angular velocity of natural motion of gyro; for

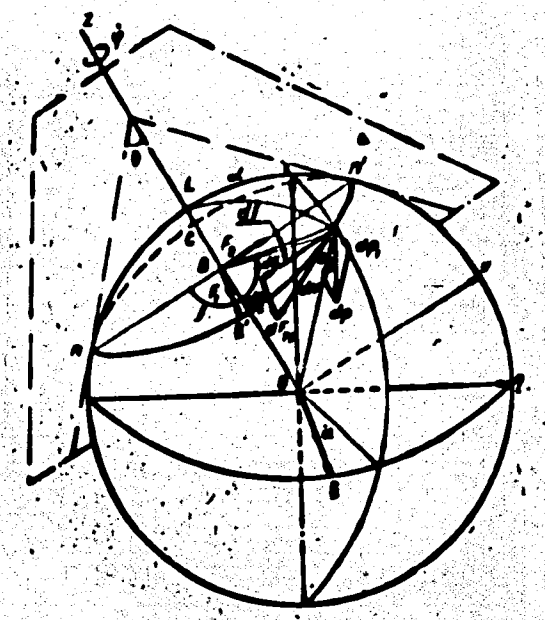
UDC: 531.383

Card 1/2

L 10462-67

ACC NR: AP6031042

other symbols, see figure. Predominantly dry friction is assumed (H. Kortum, Feingeräte-technik, no. 2, 1958). Orig. art. has: 3 figures and 16 formulas.



SUB CODE: 17 / SUBM DATE: 02Nov65

ORIG REF: 001 / OTH REF: 001

ACC NR: AP7007581 SOURCE CODE: UR/0120/66/000/009/0044/0046

AUTHOR: Kopelovich, A. P. (Engineer); Rayevich, S. K. (Engineer); Kapoport, V. M. (Engineer); Feygin, L. I. (Engineer)

ORG: none

TITLE: Usage of network methods for planning and control

SOURCE: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 9, 1966, 44-46

TOPIC TAGS: control theory, automatic control design

SUB CODE: 13

ABSTRACT: A review of network planning and control methods (PERT-based) is presented. An improvement in standard network diagrams, in the form of lines dividing the graph into equal time periods, is presented. This improvement allows the actual reserve of time for each individual operation to be determined. Some general rules for application of network planning diagrams, such as insistance on written reports and avoidance of telephone reports, frequency of progress meetings, etc., are presented. Orig. art. has: 1 figure. [JPRS: 39,779]

Card 1/1 UDC: 65.012.122

L 5315-66 EWT(d)/FBD/FSS-2/EWT(1)/FS(v)-3/EEC(k)-2/EWA(d) AST/TT/RB/GS/GW/WS-2
ACCESSION NR: AT5023642 UR/0000/65/000/000/0581/0606

AUTHORS: Benediktov, Ye. A.; Getmantsev, G. G.; Mityakov, N. A.; Rapoport, V. O.; Sazonov, Yu. A.; Tarasov, A. F.

TITLE: Results of the intensity measurements of radio-frequency radiation at frequencies of 725 and 1525 kc by means of the apparatus installed in the satellite Elektron-2

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 581-606

TOPIC TAGS: artificial earth satellite, radio emission, ionosphere, atmospheric radiation, radio receiver, geomagnetic field

ABSTRACT: The results of radio-frequency measurements taken by the Elektron-2 satellite are analyzed and the equipment used is described. Two fixed-frequency receivers tuned to 725 and 1525 kc were used with a common dipole antenna. One side of the antenna was a 3.75-m metal stub, and the other side was the body of the satellite; the radiation resistance was 0.033 ohm for 725 kc and 0.146 ohm for 1525 kc for a capacitance of 46 pF. The receivers used straight amplification with 3 rf

Card 1/5

stages and 2 af stages. The error in the absolute value of the intensity of cosmic radio emission was ± 30% for 1525 kc and (+30, -50)% for 725 kc. The measurement results were processed by converting the output voltages to the effective temperature of radio emission. Values of effective temperature T_{eff} for a 2-hr flight near the apogee are given in Fig. 1 on the Enclosure, where the points correspond to 1525 kc and the crosses to 725 kc. All of the data on the spectrum of cosmic radio emission indicate that for $f \leq 3$-5 Mc its intensity decreases with frequency. The profile of the electron concentration in the ionosphere was determined from its effect on radiation resistance and capacitance of the antenna. A graph of electron concentration N versus altitude h is shown in Fig. 2 on the Enclosure. Sporadic radio emission from the earth's atmosphere considerably exceeding the cosmic radio emission in intensity was recorded at both frequencies. A correlation between radio emission and the intensity of soft-electron flux is found. The distribution of radio emission indicates that electron fluxes penetrate the ionosphere primarily at latitudes of 30-50°. The authors thank Yu. V. Abramov, A. A. Andronov, B. N. Boykin, V. L. Ginzburg, V. V. Zheleznyakov, V. B. Karavanov, Yu. I. Logachev, G. A. Skuridin, and V. Yu. Trakhtengerts for aid in preparing the experiment and discussion of the results. Orig. art. has: 14 graphs, 1 diagram, 1 chart, 3 tables, and 11 formulas.

L 5315-66
ACCESSION NR: AT5023642

ASSOCIATION: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva, Moscow (All-Union Conference on Space Physics)

SUBMITTED: 02Sep65 ENCL: 02 SUB CODE: ES, NP

NO REF SOV: 011 OTHER: 007

Card 3/5

L 5315-66
ACCESSION NR: AT5023642

ENCLOSURE: 01

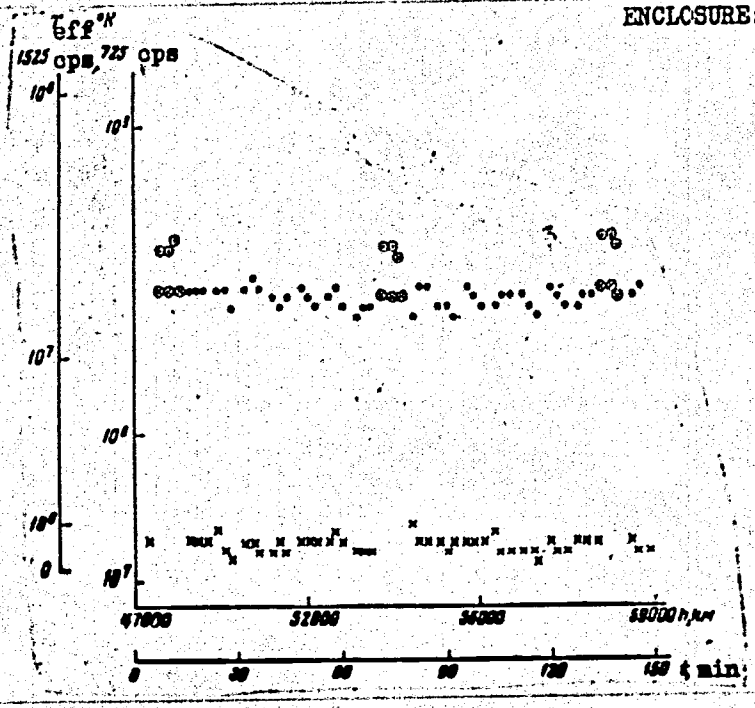


Fig. 1. Effective temperature versus time

Card 4/5

L 5315-66

ACCESSION NR: AT5023642

ENCLOSURE: 02

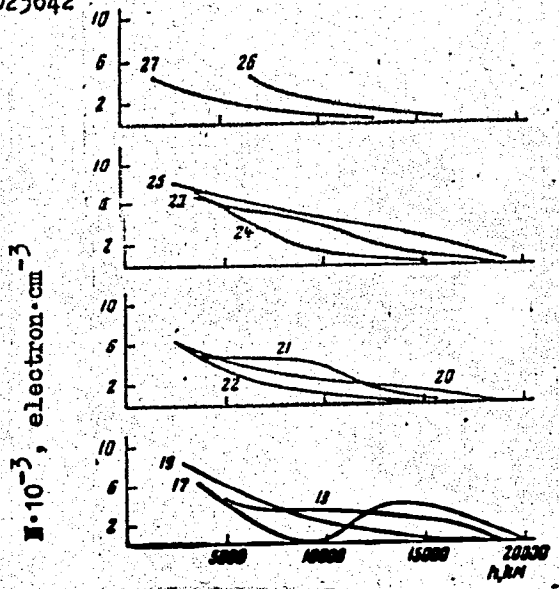


Fig. 2. Electron concentration versus altitude

Card 5/5

ARTEM'YEVA, G.M.; [illegible], Ye.A.; [illegible], V.O.

Relation between sporadic solar radio-frequency radiation in the decameter band and chromospheric flares. Astron.zhur. 42 no.5:1011-1013 S-O '65. (MIRA 18:10)

1. Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta.

10

L 65295-65 EWT(d)/EWT(l)/FS(v)-3/FSS-2 TT/AST/GW

ACCESSION NR: AP5021255 UR/0293/65/003/004/0618/0629
629.195.2:621.39

AUTHORS: Getmantsev, G. G.; Kalashnikov, N. I.; Bykov, V. I.; Benediktov, Ye. A.; Yerukhimov, L. M.; Belikovich, V. V.; Bakhnin, V. M.; Kantor, L. Ya.; Korobkov, Yu. S.; Kunilov, M. V.; Mityakov, N. A.; Puzyrev, I. M.; Rapoport, V. O.; Sigalov, A. G.; Cherepovitskiy, V. A.; Akim, E. A.

TITLE: The results of an experiment on radio communications via "Echo 2" and the moon at a frequency of 162.4 megacycles between the observatories of Jodrell Bank and Zimenki

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 4, 1965, 618-629

TOPIC TAGS: moon, satellite communication, radio telescope, radio transmission, satellite tracking, scientific research coordination / Jodrell Bank radio telescope, Zimenki observatory radio telescope, BESM 2 electronic computer

ABSTRACT: During February-March 1964 the Academy of Sciences of the SSSR, NASA of the USA, and the General Post Office Department of Great Britain conducted an experiment to establish one-way radio communication at 162.4 megacycles via the passive satellite "Echo-2" and the moon. Echo-2 was used for 34 communication

Card 1/2

L 65295-65

ACCESSION NR: AP5021255

tests of 10-15 minutes (the time interval permitted by Echo's orbit), and the moon was used for 15 test runs between the Echo tests. The transmitting equipment at Jodrell Bank and the receiving unit of the Zimenki Observatory are described in detail. Echo orbit information furnished by NASA, visual observations, and radio tracking data from fixed stations were fed to a BESM-2 electronic calculator which provided programmed tracking control. The received signal exhibited strong fluctuations separable into two periods: 1) a 1-2 minute fluctuation associated with Echo-2 distortion from a sphere and with tracking errors; 2) a 3-10 second period associated with small surface irregularities. The rapid fluctuations varied with each test. Voice signals, slowed by a factor of 8, were barely intelligible. Telegraph, teletype, and photofacsimile transmission, in general, were unsatisfactory, but in periods of high signal-to-noise ratios intelligible messages were received. The moon transmissions were not as clear but did furnish scientific information. Unexpected transmission losses included 3-5 db for polarization losses and 1-2 db for unknown causes. The international cooperation was excellent, with the Soviet submitting a complete report. Offers for further cooperation have been extended. Orig. art. has: 3 tables, 7 figures, and 4 formulas.

ASSOCIATION: none

SUBMITTED: 18Apr65 ENCL: 00 SUB CODE: AA, EC

NO REF SOV: 000 OTHER: 002

Card 2/2 pg

L 9780-66 EWT(1)/FCC/EWA(h) RB/GW

ACC NR: AP5025482 SOURCE CODE: UR/0203/65/005/005/0930/0931

AUTHOR: Rapoport, V. O.; Eydman, V. Ya.

51
03

ORG: Radiophysical Institute in the Gor'kiy State University (Radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete)

TITLE: Radio emission generated in ionosphere during ionization by corpuscular stream

SOURCE: Geomagnetism i aeronomiya, v. 5, no. 5, 1965, 930-931

TOPIC TAGS: radio wave, radio emission, ionosphere, ionization, solar activity, solar corpuscular radiation

ABSTRACT: Radio emissions of the ionosphere in the decimeter and meter wave bands, observed during the years of maximal solar activity have been mentioned in the literature. These radio emissions were evidently caused by the penetration of corpuscular streams into the earth's ionosphere. They could not be explained by the Cherenkov or synchrotron radiation mechanisms. The phenomenon could, however,

1/2

UDC: 550.388.2

L 9780-66

ACC NR: AP5025482

be explained by the radiation of electrons knocked out of molecules by the fast particles of the corpuscular stream. Assuming that the rate of speed (v) of electrons of the stream was $v \ll c$ (c is the speed of light) and the time of collision $\tau \ll 1/\nu$ (ν is the frequency), it was proven that the intensity of radio emission P (erg./cm^2 sec, ster cycle) could be written as $P = e^2 P_e / 3mc^2 \nu$ (where e and m are the charge and the mass of the electron) provided the stream of fast electrons, having the stream energy P_e (erg/cm^{2}sec.ster), passed through the ionosphere. According to V. L. Ginzburg (Rasprostranenie elektromagnitnykh voln v plazme. Fizmatgiz, 1960), P could be expressed by an effective temperature (T_{ef}) at the outlet of the receiver as $P = 2 K T_e / \lambda^2$; where λ is wavelength and K is the Boltzmann constant. It followed from these 2 expressions that $T_{ef} = 4 \lambda^2 e^2 P_e / 3 K_2 mc^2 \nu$. The T_{ef} was calculated as 200K by using data on P_e ($\sim$400 erg./cm.^{2}sec. ster.), obtained by the Injun satellite at $\lambda = 400$cm. R. D. Egan and A. M. Peterson (J. Geophys. Res., 1960, 65, 3830.) registered $T_{ef} = 10^3$K, i.e. by 1 order higher than the calculated value. But the data, used in the calculation, were obtained during years of decreased solar activity, whereas the radio emissions of the ionosphere (measured T_{ef}) were observed in 1958, i.e. in the year of maximum solar activity. Orig. art. has: 5 formulas.

SUB CODE: 04,03,17/SUBM DATE: 21Dec64/ NR REF SOV: 003/ OTHER: 007

2/2 PC

L 6345-66 FBD/EWT(1) GW/WS-2

ACC NR: AP5025618 SOURCE CODE: UR/0033/65/042/005/1011/1013

AUTHOR: Artem'yeva, G. M.; Benediktov, Ye. A.; Rapoport, V. O.

ORG: Radiophysics Institute, Gor'kiy State University (Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo)

TITLE: Relationship between sporadic solar radio emission in the decameter range and chromospheric flares

SOURCE: Astronomicheskiy zhurnal, v. 42, no. 5, 1965, 1011-1013

TOPIC TAGS: radio astronomy, radio emission, solar chromosphere, solar radio emission, solar radiation effect

ABSTRACT: Data on solar radio emission bursts in the decameter range and the parameters of chromospheric flares are compared. 850 bursts were recorded at Zimenkakh, using apparatus designed for radio astronomical investigations of the ionosphere and investigations of the spectrum of cosmic radio emission at a number of fixed frequencies in the range 6-25 Mc/s. Observations were made in different periods from July 1959 through September 1962. All bursts were divided into two groups according to whether or not they coincided with chromospheric flares. Although

UDC: 523.75.164

Card 1/2

L 6345-66
ACC NR: AP5025618

this separation was arbitrary it indicated a correlation between solar radio emission bursts in the decameter range and solar activity in the optical range. For example, of the 131 bursts observed from 25July 1959 through 20 October 1959, 74 (57%) coincided in time with chromospheric flares. During the same time there were only 57 bursts when no chromospheric flares were present. Statistical analysis reveals that the probability of occurrence of bursts of the second group is 5 times less than for the bursts of the first group. Statistics for the first group of bursts were analyzed to determine a possible dependence between the intensity of the bursts and their spectral index, and also such flare parameters as areas, brightness, width of the H_α line and position on the solar disk. Although no clear relationship was discovered between the parameters of the bursts and flares brightness or area, there is a definite dependence between the probability of appearance of solar radio emission bursts at $\lambda > 10$ m and the width of the H_α line. Further analysis revealed presence of an east-west asymmetry of the distribution of radio emission bursts in the decameter range on the solar disk. "The authors express appreciation to L. G. Pavlov for assistance in analyzing the data". Orig. art. has: 3 figures.

SUB CODE: AS/ SUBM DATE: 09Dec64/ ORIG REF: 003/ OTH REF: 005

nw
Card 2/2

GULIZADE, M.P.; SHAKHBAZBEKOV, K.B.; RAPOPORT, V.O.; SUSHON, L.Ya.

Study of the friction force in lowering the drill column into an inclined well. Izv. vys. ucheb. zav.; neft' i gaz 6 no.4:15-18 '63. (MIRA 16:7)

1. Azerbaydzhanskiy institut nefti i khimii imeni M.Azizbekova.
(Friction)
(Oil well drilling—Equipment and supplies)

GULIZADE, M.P.; SHAKHBAZBEKOV, K.B.; RAPOPORT, V.O.; SUZHON, L.Ya.

Studying the force of friction in a deflected well. Izv. vys. ucheb. zav.; neft' i gaz 6 no.2:23-28 '63. (MIRA 16:5)

1. Azerbaydzhanskiy institut nefti i khimii imeni M.Azizbekova.
(Oil well drilling--Equipment and supplies)
(Friction--Testing)

RAPOPORT, V.O.

Growing electromagnetic radiation in a disperse medium moving through a nondisperse medium. Izv. vys. ucheb. zav.; radiofiz. 3 no.1:148-150 '60. (MIRA 13:12)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Electromagnetic waves)

MITYAKOVA, E.Ye.; MITYAKOV, N.A.; RAPOPORT, V.O.

Concerning the measurement of the electron density in the ionosphere and interplanetary space. Izv. vys. ucheb. zav.; radiofiz. 3 no.6:949-956 '60. (MIRA 14:4)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Cosmic physics) (Electrons)

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10.8000 17 4110 9.7660
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S/056/60/038/004/023/048
B006/B056

AUTHORS: Getmantsev, G. G., Rapoport, V. O.

TITLE: The Build-up of the Electromagnetic Waves in a Plasma Moving in a Dispersion-free Dielectric in the Presence of a Constant Magnetic Field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1205 - 1211

TEXT: The present paper describes a theoretical investigation of the propagation of electromagnetic waves in a plasma, and especially, a determination of the build-up (damping) factor for plane electromagnetic waves propagating in a plasma moving in a dielectric without dispersion along the lines of force of a constant homogeneous magnetic field. The damping factors of the waves are found according to a phenomenological method suggested earlier (Ref. 2) by Getmantsev. The method consists essentially in first setting up equations of matter which establish a connection between the electric fields in the moved media penetrating one another. These equations are combined with the Maxwell equations. With

Card 1/2

DOSSER, Ye.M.; RAPOPORT, R.I.; YERMAKOVA, M.N.; AKOPOVA, I.I.; DOROFEYEV, V.M.

Production of monlayer cell cultures from the tissues of different animals. Vop.virus. 7 no.3:336-343 My-Je '61. (MIRA 14:7)

1. Moskovskiy nauchno-issledovatel'skiy institut virusnykh preparatov.
(TISSUE CULTURE)

VYGOVSKIY, S.I., inzh.; RAPOPORT, T.I., inzh.

Instrument desk for control and measurements in voice-frequency telegraph channels. Vest. sviazi 23 no.6:12-13 Je '63. (MIRA 16:8)

L 27184-65 EWG(j)/EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(j)/T/EWA(h)/EWA(1)
Pc-4/Pr-4/Ps-4/Pt-10/Peb/Pu-4 RPL WW/GG/RM

ACCESSION NR: AP5005898 S/0020/65/160/003/0646/0649

AUTHOR: Col'danskiy, V. I. (Corresponding member AN SSSR); Gusakovskaya, I. G.; Yegorov, Ye. V.; Korolev, G. V.; Rapoport, V. B.

TITLE: Radiation polymerization of poly(alkyl acrylates) 62 52 B

SOURCE: AN SSSR. Doklady, v. 160, no. 3, 1965, 646-649

TOPIC TAGS: alkyl acrylate, alkyl methacrylate, polyalkylacrylate, polyalkylmethacrylate, radiation polymerization, free radical, hot radical theory, thermal polymerization, polymerization energy transfer

ABSTRACT: Because there is no published data on the subject, the authors studied the kinetics of radiation-induced polymerization of alkyl acrylates and compared the obtained relationships with those pertaining to the three-dimensional thermal polymerization of the same monomers. A method of direct measuring of the heat evolved in the polymerization, developed by the authors, was applied for the first time. Poly(alkyl methacrylate) oligomers (MB from butanediol methacrylate) and two condensation products of butanediol and methacrylic and phthalic acid (MBP-1 and MBP-2), differing in the length

Card 1/3

L 27184-65

ACCESSION NR: AP5005898

of the oligomer chain, were used. The viscosity of the medium was increased by adding varying amounts of an inert, highly viscous solvent, IDP-2 (a condensation product of isobutyric acid, diethyleneglycol and phthalic acid). Irradiation was carried out either in a GUT-400 Co^{60} installation (dose rate 3—21 rad/sec) or in an electron accelerator (dose rate 10^4—10^5 rad/sec) at 20—25C. The results were recorded by a thermograph, which produced the heat evolution curve vs the time of irradiation. Analytical processing of the data gave the curves of the reduced polymerization rate vs dose rate and vs the degree of conversion. It was found that, as in thermal polymerization, oxygen inhibits the process of radiation-induced polymerization, and that the process has a chain-radical mechanism of conversion. However, two differences were noted: 1) In radiation polymerization "hot radical" recombination in the rigid three-dimensional structure was more difficult. Therefore, it was assumed that the dissipation and the transfer of energy necessary for the propagation of the polymerization took place along the polymer chains, which acquired a certain mobility, and that energy transfer was effected by a gradual excitation of the energy levels along the chains. The latter assumption was confirmed by the independence of the polymerization rate on the

Card 2/3

L 27184-65

ACCESSION NR: AP5005898

2

viscosity of the medium, which inhibits the direct diffusion of radicals. 2) Radiation polymerization produced complete conversion (up to 100%) whereas chemically induced polymerization cannot achieve such a high degree of conversion even at high temperatures. Energy transfer along the chains also explains the improvement in physical and mechanical properties of the polymers. For example, the heat stability of the radiation-induced poly(alkyl acrylates) is several times higher than that of chemically cured polymers. The increased energy of the separate elements of the three-dimensional structure apparently produces a relaxation of inner stresses, a kind of high-temperature "annealing" of the polymer. Orig. art. has: 3 figures and 1 table. [BN]

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 14Sep64 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 007 OTHER: 002 ATD PRESS: 3191

Card 3/3

BENEDIKTOV, Ye.A.; RAPOPORT, V.O.; EYDMAN, V.Ya.

Study of plasma waves in the ionosphere. Geomag. i aer. 2 no.4: 708-711 Jl-Ag '62. (MIRA 15:10)

1. Radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete.
(Ionosphere) (Radio waves)

MITYAKOV, N.A.; RAPOPORT, V.O.

Possibility for measuring the electron concentration in the upper ionosphere and in interplanetary space on the basis of plasma wave radiation. Izv. vys. ucheb. zav; radiofiz. 5 no.3:464-467 '62. (MIRA 15:7)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Electrons) (Ionosphere) (Outer space)

BENEDIKTOV, Ye.A.; KOROBKOV, Yu.S.; MITYAKOV, N.A.; RAPOPORT, V.O.; KHODALEVA, L.N.

Results of the measurement of the absorption of radio waves in the ipnosphere. Izv. vys. ucheb. zav.; radiofiz. 3 no.6:957-968 '60. (MIRA 14:4)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Ionosphere) (Radio waves)

RAPOPORT, V.O.

Growth of electromagnetic waves in a stream moving through a plasma in the presence of a magnetic field. Izv. vys. ucheb. zav.; radiofiz. 3 no.5:737-745 '60. (MIRA 13:11)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Electromagnetic waves) (Plasma (Ionized gases))
(Magnetic fields)

9.9120 (also 1041, 1046)
9.9400

S/141/60/003/006/004/025
E032/E114

AUTHORS: Mityakova, E.Ye., Mityakov, N.A., and Rapoport, V.O.

TITLE: On the Measurement of the Electron Concentration in the Ionosphere and in Interplanetary Space

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol.3, No.6, pp. 949-956

TEXT: A brief review is given of the available methods for the determination of the electron concentration in the ionosphere with the aid of artificial earth satellites. Using the quasi-longitudinal approximation, an expression is obtained for the phase and group paths for a signal emitted from an artificial earth satellite towards a spherical earth. It is shown using the results of Al'pert et al (Ref.11) that the phase path length is given by

$$n^2_{1,2} = 1 - \frac{4\pi e^2 N}{m\,\omega(\omega \pm \omega_L)} = 1 - \frac{2aN}{\omega(\omega \pm \omega_L)} \qquad (1)$$

and

Card 1/5

S/141/60/003/006/004/025
E032/E114

On the Measurement of the Electron Concentration in the Ionosphere and in Interplanetary Space

$$L_{\phi 1,2} = r_0 - \frac{a}{\omega \cos \chi} \left[\int_0^{z_0} \frac{N}{\omega \pm \omega_L} dz - \operatorname{tg}^2 \chi \int_0^{z_0} \frac{Nz}{R_0 (\omega \pm \omega_L)} dz \right], \quad (5) \qquad (5)$$

and the group path length is given by

$$L_{rpl,2} = \int_A^B \frac{\partial (n_{1,2}\, \omega)}{\partial \omega} d\ell_{1,2} \qquad (6)$$

and

$$L_{rpl,2} = r_0 + \frac{a}{\omega \cos \chi} \left[\int_0^{z_0} \frac{N}{\omega \pm \omega_L} dz - \operatorname{tg}^2 \chi \int_0^{z_0} \frac{Nz}{R_0 (\omega \pm \omega_L)} dz \right]. \quad (7) \qquad (7)$$

In these expressions $\omega_L = (eH_0/mc) \cos \gamma$, γ is the angle between the earth's magnetic field and the wave normal, suffix 2 and the "minus" sign refer to the ordinary wave, and suffix 1 and

S/141/60/003/006/004/025
E032/E114

On the Measurement of the Electron Concentration in the Ionosphere and in Interplanetary Space

the "plus" sign to the extraordinary wave. Furthermore, N is the electron concentration, z_o is the distance from the earth's surface, r_o is the true distance from source to receiver, R_o the earth's radius, and χ is the zenith angle of the satellite (see Fig.1). These two path lengths differ from the true distance r_o by the same amount $\delta_{1,2}$. The above expressions can be used in a method whereby the electron concentration is determined by measuring the angle between the planes of polarization and the difference between the group path lengths on two frequencies. The combination of these two measurements is suggested as a possible approach to the measurement of the electron concentration in interplanetary space with the aid of cosmic rockets. To measure the electron concentration in interplanetary space it is necessary to have signals on frequencies ω_1, ω_2, ω_3 which are modulated at a low frequency Ω. The close frequencies ω_1 and ω_2 can be used to measure the Faraday effect and hence the contribution to

Card 3/5 $\int_0^{r_o} N\,dr$

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E032/E114

On the Measurement of the Electron Concentration in the Ionosphere and in Interplanetary Space

due to the ionosphere, and the distant frequencies ω_1 and ω_3 to measure the difference in the group path lengths. In order that the contribution due to interplanetary space should be comparable to that due to the ionosphere, the rocket must be at a distance of 10^6 km from the earth. The reception of signals from such distances is difficult because of the low power of the transmitters on rockets. This difficulty can easily be avoided by the use of a sinusoidally modulated signal.

Acknowledgments are expressed to G.G. Getmantsev and V.L. Ginzburg for valuable advice.

There are 1 figure and 14 references: 6 Soviet and 8 non-Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete
(Scientific Research Radiophysics Institute of the Gor'kiy University)

SUBMITTED: April 2, 1960

S/141/60/003/006/004/025
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On the Measurement of the Electron Concentration.....

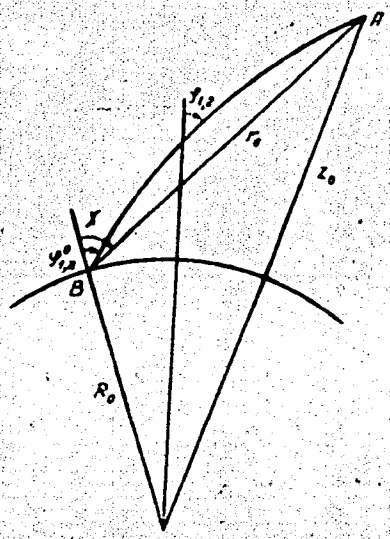

Fig.1

Рис. 1.

Card 5/5

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~~9,9100 (also 1041, 1046)~~

AUTHORS: Benediktov, Ye.A., Korobkov, Yu.S. Mityakov, N.A., Rapoport, V.O., and Khodaleva, L.N.

TITLE: Results of Measurements of the Absorption of Radio Waves in the Ionosphere

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol.3, No.6, pp. 957-968

TEXT: Results obtained at Gor'kiy in 1959 are reported. The total absorption in the ionosphere was measured with the aid of the "method of two frequencies". The method is described as follows. Suppose that the cosmic radio emission is received simultaneously on two frequencies, f_1 and f_2, where $f_2 > f_1$. For each of these frequencies the integral absorption of radio waves in the ionosphere is given by:

$$\Gamma_i = \ln (I_{0i}/I_i), \qquad (1)$$

where I_{0i} and I_i are the intensities of cosmic radio emission of frequency f_i before and after passage through the

Card 1/7

Results of Measurements of the Absorption of Radio Waves in the Ionosphere

ionosphere. If $(2\pi f_i)^2 \gg \nu^2$ and $f_i^2 \gg f_c^2$, where ν is the effective number of collisions of electrons with ions and neutral molecules, and f_c is the critical frequency of the F-layer, then the integral absorption is given by:

$$\Gamma_i = \frac{e^2}{\pi mcf_i^2} \int_0^z N \nu \, dz \qquad (2)$$

In this expression N is the electron concentration, z is the thickness of the absorbing layer, e and m are the charge and mass of the electron, and c is the velocity of light. It then follows that $\Gamma_1/\Gamma_2 = (f_2/f_1)^2$ and hence, finally, the integral absorption for each of the frequencies is given by:

$$\Gamma_1 = \frac{\ln (I_{02}/I_{01}) - \ln (I_2/I_1)}{1 - f_1^2/f_2^2} \qquad (3a)$$

Results of Measurements of the Absorption of Radio Waves in the Ionosphere

and $$\Gamma_2 = \Gamma_1 (f_1/f_2)^2 \qquad (3b)$$

If I_{02}/I_{01} does not depend on the galactic coordinates then changes in Γ_i with time depend only on the ratio of the two frequencies. In fact, the above intensity ratio is not independent of the galactic coordinates but this fact should not lead to large errors in the absorption measurements. Published data on the absorption of radio waves in the ionosphere during night hours shows that the absorption is frequently negligible. If the intensity ratio I_{02}/I_{01} is determined for these hours, then the absorption for any other time can be calculated from Eq. (3). It may be shown that the optimum frequency range for the above method differs from the standard method (described by Blum et al. in Ref.2 and Mitra and Shain in Ref.3) in that it does not require highly specialized apparatus or prolonged observations. The present authors have used the above method between August and

S/141/60/003/006/005/025
E032/E114

Results of Measurements of the Absorption of Radio Waves in the Ionosphere

December 1959 on 8.6 and 25 Mc/s. The results obtained show that the absorption has a characteristic maximum at noon each day, and a minimum at about 4 hrs. In August and September there is also an additional evening maximum at about 20 hrs. The magnitude of the noon maximum was found to be 1.1 db in August, 1.15 db in September, 1.2 db in October and November, and 1.6 db in December (on 18.6 Mc/s throughout). Fig.4 shows the diurnal dependence of the total absorption (continuous curve) and the absorption in the lower layers of the ionosphere (dotted curve) averaged over the periods 23rd to 31st October (Fig.4a) and 12th to 15th November (Fig.4b). The results obtained by the Radio Astronomical methods were checked by means of the pulse method described by Pigott et al. (Ref.9). Fig.5 shows the dependence of the absorption in the F-layer on the critical frequencies of the F-layer (18.5 Mc/s) (curve I - 12th to 15th November; curve II - 20th to 31st October; curve III - data from Ref.3). Acknowledgements are expressed to G.G. Getmantsev and V.L. Ginzburg for interest and advice.

Card 4/4

21166
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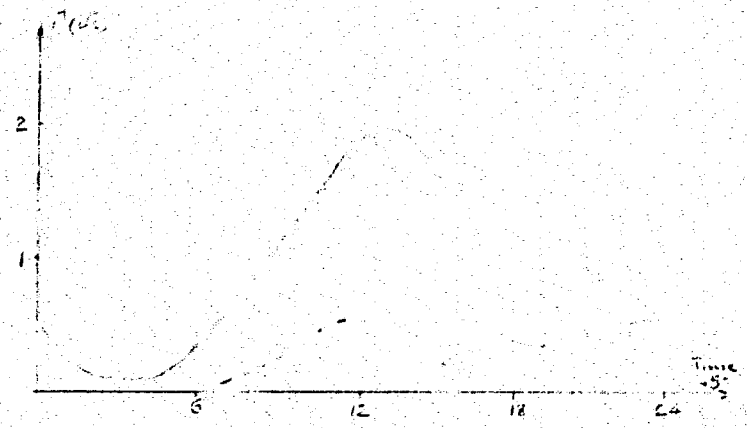
Results of Measurements.... E032/E114

There are 5 figures and 13 references: 5 Soviet and 8 non-Soviet.
ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of the Gor'kiy University)
SUBMITTED: May 10, 1960

Fig.4a



Card 5/5

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9.9868

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AUTHOR: Rapoport, V.O.

TITLE: Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 5, pp. 737 - 745

TEXT: The work can be regarded as a continuation of the work of Getmantsev and the author (Refs. 1, 2) and it deals with the problem of the growth of electromagnetic waves in plasma, where a beam of plasma moves along the lines of a constant magnetic field. The scattering equation for such a system was obtained earlier and is in the form:

Card 1/9

86849

S/141/60/003/005/002/026
E192/E382

Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

$$(\varepsilon_{11} + \varepsilon'_{11} - 1)\left[(\varepsilon_{22} + \varepsilon^*_{22}\gamma^2 - n^2\cos^2\vartheta)(\varepsilon_{33} + \varepsilon^*_{33}\gamma^2 - n^2) + (\varepsilon_{23} + \varepsilon^*_{23}\gamma^2)^2\right] - n^2\sin^2\vartheta\left[(\varepsilon_{22} + \varepsilon^*_{22} - \beta^2\varepsilon_{22}\varepsilon^*_{22}) \times (\varepsilon_{33} + \varepsilon^*_{33}\gamma^2 - n^2) + (\varepsilon_{23} + \varepsilon^*_{23}\gamma^2)^2 - \beta^2(\varepsilon^*_{22}\varepsilon^2_{23} + \varepsilon_{22}\varepsilon^{*2}_{23}\gamma^2)\right] = 0 \quad (1)$$

where ε_{ij} and ε'_{ij} are permittivity tensors of the fixed and moving media, respectively, $\varepsilon^*_{ii} = (\varepsilon'_{ii} - 1)(1-\beta^2)^{-1}$, $\varepsilon^*_{23} = \varepsilon'_{23}(1 - \beta^2)^{-1}$, $\gamma = 1 - n\beta\cos\vartheta$, n is the refractive index, $\beta = V/c$ is the ratio of the velocity of the stream to the velocity of light in vacuum, ϑ is the angle between

Card 2/9

Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

the direction of the propagation of the electromagnetic waves and the velocity of the beam. The components of the tensor of the permittivity are given by the last equation on p. 737 (Refs. 2, 6), where ω_o is the Langmuir frequency for the stationary plasma, ω_{os} is the Langmuir frequency for the moving plasma and ω_H is the gyromagnetic frequency for the electrons in the magnetic field. It is necessary to find such regions in the space of the parameters ω_o, ω_{os}, ω_H, β and ϑ where there exist complex solutions of Eq. (1) with respect to ω; it is also necessary to determine the increment (damping) factors for the electromagnetic waves which are characterised by the imaginary frequency ω. By assuming that the plasma beam is sufficiently rarefied, Eq. (1) can be written as:

$$F(\omega, \omega_o, \omega_H, \vartheta) = \omega_{os}^2 F_1 \qquad (2)$$

Card 3/9

Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

where F_1 is defined on p. 438 and F is given by Eq. (3). Eq. (2) can be rewritten as Eq. (4). Since the quantity ω_{os} is small, the solutions of Eq. (4) are possible only if the expression in the brackets is large. The function Φ has a pole of the first order for the case when $F(\tilde{\omega}) = 0$ or if $\omega - kV\cos\vartheta \pm \omega_H = 0$; a pole of the second order occurs when $\omega = kV\cos\vartheta$ or $F(\tilde{\omega}) = 0$ and the pole of the third order is obtained when the conditions (5) and (5a) are fulfilled. If Φ has a pole of the first order, Eq (4) is an equation of the first degree with respect to ξ. When Φ has a pole of the third order the increment factor can have maximum values. In this case, Φ can be expressed by Eq. (6). From Eqs. (5) and (5a), it is possible to eliminate n and thus the relationship between ω and the direction of the wave propagation is expressed by Eq. (7).

S/141/60/003/005/002/006
E192/E382

Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

where $\alpha = \omega_0^2/\omega_H^2$ and $X = \omega^2/\omega_H^2$; the sign "+" corresponds to the subscript 1 and the sign "-" relates to subscript 2 . From Eq. (7), it is seen that for any direction ϑ the growth of electromagnetic waves occurs at discrete frequencies. The scattering curves for $\alpha = 2$, $\beta^2 = 0.1$ are given in Fig. 1. The solutions of Eq. (7) have a definite physical meaning provided ϑ is a real quantity. The curve in Fig. 1 has two branches; one for low frequencies (from 0 to $X = X_2$) and for high frequencies (from $X = X_3$ to $X = 1 + \alpha$) . The boundaries of the regions where the electromagnetic waves can increase are determined by the values of X at which $\sec^2\vartheta \to \infty$ and also by the values of X at which $\sec^2\vartheta = 1$ (these points in Fig. 1 are denoted by

Card 5/9

S/141/60/003/005/002/006
E192/E382

Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

X_1, X_2, X_3) . For $\vartheta = 0$ the scattering equation (3) can be written as Eq. (8). Figs. 2 and 3 show the scattering curves in n^2, v and u, v coordinates for the quasi-longitudinal case. From Figs. 2 and 3 it is seen that the solid line in Fig. 2 characterises the propagation of the ordinary waves, while the dotted line corresponds to the extraordinary waves. From Figs. 1 and 3 it follows that the low-frequency branches in Fig. 1 determine the propagation of the ordinary wave, while the high-frequency branch relates to the extraordinary wave. Eq. (8) can be solved with respect to X ; the resulting solution is given by Eq. (9). From this it follows that for $\beta \to 0$, provided $\alpha < 1$ at the frequencies corresponding to the low-frequency branch of the scattering curve determined by Eq. (7), the increase

Card 6/9

86849
S/141/60/003/005/002/026
E192/E382

Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

in the amplitude of the electromagnetic waves can occur at $\alpha > \mathbf{X} > 0$; at the frequencies corresponding to the high-frequency branch the waves can increase in amplitude for $1 < \mathbf{X} < 1 + \alpha$. The increment factors for the wave can be determined on the basis of Eq. (6). Normally, the scattering equation (2) is solved by the method of successive approximations, whereby ω and n are expanded into a series for fixed values of k and ϑ. A frequency correction ξ is introduced for this purpose. If ξ is determined in terms of $\tilde{\omega}$ and ϑ the resulting expression is comparatively simple and is in the form of Eq. (10). This can further be simplified for various special cases. Thus, for $\alpha \gg 1$ and $\mathbf{X} < 1$ the scattering equation can be written as Eq. (11) and the expression for ξ is given by Eq. (12). On the other hand, for $\alpha \gg 1$ and $\mathbf{X} - \alpha < 1$, ξ is given by Eq. (13). The expressions for ξ for other cases are given by Eqs. (15), (17) and (18). The above solutions were

Card 7/9

86849

S/141/60/003/005/002/026
E192/E382

Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

obtained without taking into account the thermal motion of the particles in the beam. These equations are valid provided the condition of Eq. (19) is fulfilled, where V_T is the temperature velocity of the electrons in the beam. The above results can be used in the investigation of the problem of the generation of ultrahigh-frequency oscillations by means of fast beams in electronic devices; the results can also find application in geophysics and, in particular, in the investigation of the problem of radiation of low-frequency electromagnetic waves by corpuscular beams. The author makes acknowledgment to G.G. Getmantsev and M.S. Kovner for valuable advice.
There are 3 figures and 6 Soviet references.

Card 8/9

86849

S/141/60/003/005/002/026
E192/E382

Growth of Electromagnetic Waves in a Beam Moving in Plasma in the Presence of a Magnetic Field

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

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Card 9/9

GULIZADE, M.P.; SHAKHBAZBEKOV, K.B.; RAPOPORT, V.O.; SUSHON, L.Ya.

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1. Azerbaydzhanskiy institut nefti i khimii imeni M.Azizbekova.